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3. In all countries it is found that the strongest feelings of family affection are seen in persons of the *middle* or *even of the higher ranks*, whose minds have undergone more or less of that cultivation which is necessarily out of the power of those who are constantly and anxiously occupied in the pursuit of the first necessities of life. From which we may infer, that security against destitution, if accompanied by religious and moral education, can have at least no injurious effect on family affection; and that, by reducing people to destitution, we are much more likely to weaken than to strengthen those sacred ties.

As to what was said, on this occasion, of the experience of St. John's parish in Glasgow, during the time (from 1820 to 1838) when the poor in it were provided for without assessment, it seems sufficient to say that no answer was made to the observations on that experiment, which I had made in my reply to Mr. Monypenny (pp. 62 to 64). There was no evidence as to the amount of destitution in the parish not admitted on the poor's roll during the continuance of that experiment, as compared with other parts of Glasgow—as to the extent to which fever spread in it during the late epidemic, nor to which extraordinary assistance was sought, or appeared to be required in it in times of general distress. It was admitted that many of the elders and deacons, who took charge of the poor in that parish, belonged to other parts of the town, and often procured employment in those other parts for persons likely to become destitute in St. John's; and it appeared farther, even on a cursory inspection of the parish, that although a poor, it is by no means a destitute district, being for the most part suburban; and containing very little of that depressed, degraded, and rapidly migratory population, which constitutes so great and so dangerous a part of the inhabitants of the central and poorest districts of the large towns in Scotland.

Vital Statistics of Glasgow, illustrating the Sanatory Condition of the Population. By ROBERT COWAN, M.D., Professor of Medical Jurisprudence and Police in the University of Glasgow.

[Read before the Statistical Section of the British Association, 21st September 1840.]

“La misère, avec les privations qu'elle amène à sa suite, est une des causes les plus influentes sur la mortalité.”—QUETELET.

IN the following paper it is proposed to lay before the Statistical Section of the British Association—

I. Tables of the climate of Glasgow—of the progress of the population—of the marriages, births, and deaths, and the ratio which they bear to the estimated population—of the still-born, and the baptisms, distinguishing males and females, and their relative proportion—of the deaths under five years of age—of the relative mortality under, at, and above five years of age—of the relative mortality of the different months and seasons of the year—of the increase and decrease of deaths at each age, and of the proportion of burials at the public expense.

II. Causes of the high rate of mortality in Glasgow—existence of epidemic diseases affecting the adult and infantile portions of the population respectively—tables of the numbers affected with fever treated in the hospitals of Glasgow—and in their own houses at the public

expense, within the burgh—of the deaths from fever during the last five years, in the city and suburbs—of the estimated numbers attacked—of the deaths monthly from fever, for four years, distinguishing the sexes, and giving the proportion to the whole deaths monthly.

III. Number of persons admitted into the Fever Hospital, distinguishing the country, sex and age of each individual—the mortality at each interval of age, distinguishing males and females, with a combined table of the deaths at each age—of the numbers exposed to contagion—of the numbers in whom eruption appeared—of the mortality of the eruptive and non-eruptive cases.

IV. Map of the city, shewing the division of the districts, and the number of fever patients in each.

V. Tables of mortality from influenza in 1837.

VI. " " cholera in 1832.

VII. Epidemics of children:—

1. Small-pox, mortality of, with the ages.

2. Scarlet fever " "

3. Measles " "

VIII. Deaths from all these diseases, and estimated number attacked during the last five years.

IX. General remarks.

I.

"The city of Glasgow is situated in latitude $55^{\circ} 51' 32''$ North, and longitude $4^{\circ} 17' 54''$ West, according to the determination of Dr. Wilson, formerly Professor of Astronomy in the University. The mean heat of Glasgow was formerly determined by Dr. Thomas Thomson to be $47^{\circ} 57'$ of Fahrenheit. In the second edition of Dr. Cleland's folio statistical work, pp. 102 to 109, the yearly quantity of rain is given for 30 years, as ascertained by Dr. Couper, Professor of Astronomy in the University, shewing a yearly average of 22·328 inches. The least quantity, in any one year, was 14·468 inches in 1803; and the greatest 28·554 inches in 1828."*

By the kindness of Mr. John Couper and of Professor Nichol, I have been enabled to bring down Dr. Cleland's table to the end of 1837.

Table shewing the Depth of Rain in each Month for the last Ten Years, as extracted from the Records of the Rain Gauge at the University, Glasgow.

MONTHS.	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
January .	2·345	0·523	0·350	0·520	0·620	0·256	3·954	0·985	3·868	1·956
February .	1·682	1·752	1·374	2·000	1·565	2·609	1·368	2·188	0·732	2·674
March .	0·974	1·357	1·463	2·531	1·906	0·598	1·759	1·582	2·375	1·500
April .	1·253	0·516	3·815	1·481	1·147	1·072	0·134	0·717	1·098	1·646
May .	2·873	1·265	1·637	0·370	1·205	0·778	0·762	1·992	0·173	1·857
June .	2·291	1·686	0·978	0·980	2·647	2·617	2·078	0·478	1·812	2·241
July .	3·692	1·725	2·315	2·120	0·822	1·082	1·183	1·875	4·535	3·322
August .	1·734	5·207	1·656	1·940	2·314	0·936	2·523	1·625	2·902	2·610
September .	1·985	1·425	3·511	1·952	1·259	1·018	2·578	4·554	4·549	1·570
October .	1·472	3·791	1·834	4·313	4·500	1·987	1·403	1·515	3·834	2·997
November .	3·571	1·896	5·461	2·832	2·072	1·753	3·007	3·417	3·158	2·293
December .	4·682	1·348	1·527	1·908	2·738	5·202	1·112	1·738	2·673	1·963
Total .	28·554	22·491	25·921	22·937	22·785	19·908	21·861	22·666	31·709	26·629

* Statistical Account of Scotland, article GLASGOW.

To Dr. Hugh Colquhoun, of this city, I am indebted for the following valuable scientific summaries of the weather for the five years from 1834 to 1838. The observations were made at a height of 166 feet above the level of the sea.

*Mean of Observations made at 9 A. M., and 9 P. M.**

MONTHS.	Barometer at 32°.					Thermometer.				
	1834	1835	1836	1837	1838	1834	1835	1836	1837	1838
	Inches.	Inches.	Inches.	Inches.	Inches.	o /	o /	o /	o /	o /
January . .	29·378	29·955	29·653	29·790	29·785	41·61	37·78	37·84	36·13	30·21
February . .	29·838	29·522	29·710	29·595	29·516	40·24	39·75	35·39	40·55	28·48
March . .	30·060	29·829	29·212	29·884	29·545	42·55	40·13	38·60	34·39	37·42
April . .	30·208	30·094	29·698	29·700	29·582	46·03	43·95	42·05	38·28	40·30
May . .	29·910	29·784	30·213	29·816	29·788	52·65	48·87	51·04	48·21	46·58
June . .	29·787	30·016	29·615	29·815	29·554	56·14	55·28	55·19	56·89	53·49
July . .	29·982	29·909	29·688	29·753	29·641	59·69	56·23	54·38	60·80	56·92
August . .	29·672	29·397	29·841	29·813	29·519	57·55	58·64	53·17	56·90	55·64
September .	29·993	29·479	29·690	29·709	29·678	54·95	52·27	47·37	52·99	52·92
October . .	29·880	29·622	29·558	29·762	29·596	49·60	45·56	42·89	48·92	46·11
November .	29·855	29·754	29·325	29·557	29·274	43·77	41·85	38·11	39·68	39·60
December .	30·195	30·065	29·608	29·722	29·697	42·15	38·67	38·27	41·95	40·76
Average .	29·896	29·827	29·818	29·743	29·598	48·91	46·58	44·52	46·31	44·04

The comparative prevalence of the several winds will be seen from the following Table:—

Number of Days in which each Wind prevailed.

WINDS.	1834	1835	1836	1837	1838	Total.
North . . .	15	18	25	15	19	92
North-east . .	67	70	54	90	61	342
East . . .	17	35	19	22	68	161
South-east . .	7	4	5	3	8	27
South . . .	8	9	7	6	13	43
South-west . .	135	93	124	147	95	594
West . . .	93	192	90	45	71	401
North-west . .	23	34	41	37	30	165
						622
						1,203

To this may be appended the following epitome of meteorological observations during the same period:—

DESCRIPTION.	1834	1835	1836	1837	1838
Wind high, or inclining to high . . Days	60	55	72	33	52
„ slight	305	315	293	332	313
Weather clear	125	104	91	113	97
„ cloudy or dull	240	261	274	252	268
Rain, or Snow with	84	75	133	115	89
„ changeable	86	96	72	61	72
„ without	195	194	160	189	204
Frost	8	23	30	32	54
Depth of Snow Inches	1	9	20	11	18

* Dr. Cowan's MS. contained the results of the observations at these two hours, as well as the mean. The latter alone is inserted here.

The following meteorological table for 1839 was drawn up by Graham Hutchison, Esq., and is extracted from the Mortality Bill for 1839. The observations were made at an elevation of about 120 feet above the level of the sea:—

MONTHS.	Common Ther- mometer.	Baro- meter.	Weather.		Winds at 10 o'clock, A. M. (Number of Days).							
	Mean heat at 10 o'clock, A. M.	Mean height at 10 o'clock, A. M.	Dry Days throughout.	Days on which more or less Rain or Snow fell.	East.	North-east.	North.	North-west.	West.	South-west.	South.	South-east.
January .	36.1	29.6	10	21	..	2	4	9	6	10	..	..
February .	38.3	29.7	9	19	1	2	..	3	8	8	5	1
March .	39.7	29.7	10	21	6	8	2	..	5	6	1	3
April .	45.6	30.0	17	13	6	4	1	..	6	10	..	3
May .	51.7	29.9	22	9	1	9	4	5	6	3	2	1
June .	59.3	29.8	17	13	2	9	1	2	7	4	3	2
July .	61.3	29.7	15	16	1	4	..	7	3	8	7	1
August .	58.9	29.8	12	19	1	4	1	3	5	11	5	1
September	55.1	29.4	7	23	3	1	..	3	4	12	3	4
October .	48.8	29.9	18	13	2	12	..	..	3	5	5	4
November	43.9	29.5	7	23	5	10	..	4	..	7	1	3
December	38.1	29.5	14	17	16	..	..	1	3	4	2	5
	48.066	29.708	158	207	44	65	13	37	56	88	34	28

"The lowest temperature registered in 1839 was 18° Fahr., which occurred in the morning of the 21st of February; the highest was 81° Fahr., which occurred on the 17th of June, making an annual range between these extremes of 63° Fahr. The lowest registered altitude of the barometer in 1839 was 27.9 inches, which occurred during the great storm at 7 o'clock A.M. of the 7th of January; the highest altitude was 30.6 inches, which occurred on the 10th and 11th April, making an annual range of 2.7 inches."

The following Table of the progress of the population is given for the purpose of exhibiting the data upon which the annual amount of population from 1822 has been calculated, and of comparing the number of marriages, births, deaths, the number of persons admitted into the hospital, and the number affected with fever and other epidemic diseases, with the population, as accurately ascertained at the different enumerations:—

Years.	Population.	Years.	Population.
1791	66,578	1819	147,197
1801	83,769	1821	147,043
1811	110,460	1831	202,426

According to the census of 1831, 3,908 was the amount of the rural, and 198,518 of the town, population. The number of males was 93,724, and of females 108,702, being in the proportion of 100 to 116. The numbers who were natives of Scotland and of other countries were respectively as follows:—

Scotch.	English.	Irish.	Foreigners.	Total.
163,600	2,919	35,554	353	202,426

The ages of persons in Glasgow, and in the suburban parishes of Barony and Gorbals at the same period, may be seen in the next Table.

AGES.	Males.	Females.	Total.
Under 5	15,422	14,855	30,277
From 5 to 10 . .	13,127	12,580	25,707
„ 10 „ 15 . .	10,491	10,720	21,211
„ 15 „ 20 . .	8,489	12,256	20,745
„ 20 „ 30 . .	15,177	23,008	38,185
„ 30 „ 40 . .	12,179	14,240	26,419
„ 40 „ 50 . .	8,685	9,329	18,014
„ 50 „ 60 . .	5,549	6,099	11,648
„ 60 „ 70 . .	3,228	3,692	6,920
„ 70 „ 80 . .	1,090	1,502	2,592
„ 80 „ 90 . .	260	385	645
„ 90 „ 100 . .	26	32	58
„ 100 and upwards .	1	4	5
Total	93,724	108,702	202,426

It is quite obvious from these tables that the increase of population in Glasgow has arisen in a very great degree from immigration, and that from the increased demand for female domestic servants, and for female labour in the numerous cotton and power-loom factories and bleachfields in the neighbourhood of the city, a large proportion of the immigrants have been females. Those who resort for employment to towns are generally from the age of 15 to 25, a fact of some importance in reference to fever, as will afterwards be seen; and most of this portion of our population are, at this early age, emancipated from the wholesome and salutary check of parental discipline, and consequently become more liable to disease.

In 1819 there was one Irish person out of every 9·67 of the inhabitants; and in 1831 one out of every 5·69. From this increase of Irish alone, without including the influx of labourers from the highlands and lowlands of Scotland, it is evident that the relative proportion of the middle and wealthier classes to the labouring class must have been yearly diminishing, and to this may be traced one source of the increasing rate of mortality in Glasgow.

Prior to the census of 1841 it will be quite impossible to ascertain the number of Irish in Glasgow, but they probably amount to 1 in 4 of the inhabitants. With regard to the number of the Gaelic population, it appears, from a census made in 1836, that it amounted to 22,509, but the proportion of the sexes was not ascertained.

At the census of 1831, out of 143,142 individuals, which was the total number of the population between 10 and 70 years of age, the occupations of 103,001 were recorded, and of these 29,287 were connected, either directly or indirectly, with the manufacture of cotton goods. The number of labourers was about 6,614, the number of paupers 5,006.

Marriages—From the natural and laudable anxiety of the female, and of her relations, to possess legal and undoubted evidence of a marriage having taken place, the marriage register of Glasgow, and of its suburbs, may be held as correct for all statistical purposes. Such is the opinion of Dr. Cleland, and in its truth I feel quite disposed to concur. If there is any error, it must be in stating the actual number of marriages too low, for many marriages termed “irregular marriages,” though strictly legal, are not inserted in the register. From the very accurate abstract of the proclamations of marriages, drawn up for Mr. Watt for the Mortality Bill for 1839, it is quite evident that where the parties reside in different parishes, there must be two proclamations and only one marriage, and for 1839 this would make a difference of 218. On the other hand, there are only two marriages entered in the register for 1839 as celebrated irregularly; while every person acquainted with the character of the population, must be aware that the irregular marriages are very numerous, and their omission from the register must much more than counterbalance any surplus arising from parties being proclaimed in different parishes. From the following Table it appears that the ratio of marriages to the population, though always high, is also fluctuating, depending on the state of trade and the prices of provisions. The extremes are to be found in the year 1825, which was remarkable for its “prosperity;” and in 1837, which was distinguished by the reality of the destitution and suffering which then prevailed. The mortality of 1831 and 1832 was, as usual, followed by an increased number of marriages in 1833 and 1834.

Table of the Proclamations of Marriages in Glasgow, and their Annual Ratio to the Population, during Eighteen Years, from 1822 to 1839.

Years.	Marriages.	Population.	Ratio of Marriages to Population.	Years.	Marriages.	Population.	Ratio of Marriages to Population.
1822	1,470	151,440	1 to 103·08	1831	1,867	202,420	1 to 108·42
1823	1,650	156,170	„ 94·64	1832	1,979	209,230	„ 105·72
1824	1,732	161,120	„ 93·02	1833	2,335	216,450	„ 92·69
1825	1,982	166,280	„ 83·98	1834	2,359	223,940	„ 94·93
1826	1,576	171,660	„ 108·92	1835	2,297	235,000	„ 102·30
1827	1,635	177,280	„ 108·42	1836	2,370	244,000	„ 102·95
1828	1,866	183,150	„ 98·15	1837	2,095	253,000	„ 120·76
1829	1,829	189,270	„ 103·48	1838	2,406	263,000	„ 109·31
1830	1,919	195,650	„ 101·95	1839	2,413	272,000	„ 112·72

Still born, Births, and Baptisms.—The registration of births is not attended to in Glasgow, and the register of baptisms is very defective, as a great number of dissenters decline to register the baptism of their children, and many members of the Establishment omit to do so from carelessness.

The table of baptisms registered is here subjoined, not for the purpose of comparing the numbers with the population in order to ascertain the ratio of births, but merely to exhibit the relative number of the sexes born in Glasgow, in so far as it can be drawn from the numbers baptized and the numbers still-born.

Dr. Cleland, impressed with the importance of ascertaining the

number of births in Glasgow, in connexion with the census, applied to those Reverend and Lay Pastors who are in the practice of administering baptism, for a register of the baptisms during the years 1820 and 1830, being the years preceding the Government census of 1821 and 1831. He also applied to Baptists and others, who do not baptize their children, to know the number born at maturity to members of their society; and from these sources he ascertained that during 1820 there were 2,370 children born or baptized, whose names were not entered in the public register; and that in the year 1830 the number unregistered amounted to 3,172. For those two years, therefore, the numbers approximate pretty nearly to the truth; but when the number of married persons in the city, who are not under the surveillance of any pastor, is considered, it must be allowed that the omissions in the number of births must be numerous, even for the years 1820 and 1830, notwithstanding the laudable exertions of Dr. Cleland to obtain accurate and complete returns.

The Registered Baptisms in 1820 were : . 2,661 } 5,031
 ,, Unregistered Baptisms and Births : . 2,370

Which, compared with the population of 1821 (147,043), was 1 in 29·22.

The Registered Baptisms in 1830 were : . 3,225 } 6,397
 ,, Unregistered Baptisms and Births : . 3,172

Which, compared with the population of 1831 (202,426), was 1 in 31·64.

The still-born are not included in the above statements. They amounted in 1820 to 247; and in 1830 to 471.

The births, baptisms, and still-born, in 1820-21 are as 1 in 27·85 of the population; and in 1830-31 as 1 in 29·47.

Table of the Registered Baptisms and of the Still-born, distinguishing the Sexes, in each Year from 1822 to 1839.

Years.	Registered • Baptisms.		Still-born.		Years.	Registered Baptisms.		Still-born.	
	Males.	Females.	Males.	Fem.		Males.	Females.	Males.	Fem.
1822	1,573	1,399	157	125	1832	1,840	1,548	332	292
1823	1,462	1,489	183	158	1833	1,750	1,715	306	276
1824	1,565	1,537	180	136	1834	1,826	1,523	313	248
1825	1,689	1,420	179	148	1835	1,651	1,633	368	283
1826	1,599	1,401	183	135	1836	1,795	1,530	415	287
1827	1,523	1,297	180	169	1837	1,620	1,462	371	245
1828	1,630	1,483	213	195	1838	1,641	1,518	336	247
1829	1,608	1,514	228	233	1839	1,580	1,432	318	287
1830	1,678	1,547	246	225					
1831	1,830	1,608	277	289	Total	29,860	27,056	4,785	3,978

It is a very remarkable fact, which has been long known, although the true causes of it are still veiled in obscurity, that in every country the proportion of males born is greater than that of females. The proportions vary in the different countries of Europe, but the mean is 106·00 males to 100 females. In towns the proportion of males to females is not so high as in the country; and where the observations

have been extended to legitimate and illegitimate births, as has been the case in various countries on the continent of Europe, it has been ascertained that the proportion of males is greater among the legitimate than among the illegitimate births.

The number of registered baptisms in Glasgow, from 1822 to 1839, amounts to 29,860 males, and 27,056 females, being in the ratio of 22 to 20, or 110 to 100; a proportion much above that of any other country or city in Europe.

Had all the births in Glasgow been registered, the proportion between the sexes would have been very different. The baptisms are all, or nearly all, those of legitimate children: they are the results of marriage chiefly among the wealthier classes, who alone are attentive to the registration of the baptism of their children. These marriages are also chiefly contracted by those parties in the upper and easy classes of society, among whom the age of the husband exceeds that of the wife by at least five or six years, and hence the greater proportion of males born to females; as it is an established fact, that where marriages are contracted in which the wife is older than the husband, or is even of the same age, female births predominate over the males. The workmen of Glasgow marry early; they marry females about their own age, and consequently a greater proportion of female children are born to them than to the wealthier class of married persons, among whom male births predominate.

From the register of births being imperfect, it is unnecessary to compare the number of the still-born with the births, except for the years 1820 and 1830. The number of children still-born, as drawn from the register of burials from 1822 to 1839, amounts, during that period, to 4,785 males, and 3,978 females, being in the ratio of 24 to 20.

In 1821 there was one Still-born for 21·36 Births
1831 ,, ,, 14·59 ,,

The proportion for 1821 is nearly the mean of nine of the principal towns of Europe, that for 1831 is exceeded only by that of Strasburg. In Hamburg it is 1 in 15; in Amsterdam, on an average of twelve years, it is 1 in 16·9.

Table of the Number of Still-born in each Month, from 1835 to 1839.

MONTHS.	1835	1836	1837	1838	1839	Total.
January . . .	61	59	76	74	54	324
February . . .	52	46	57	42	48	245
March . . .	66	67	67	49	54	303
April . . .	64	58	59	66	40	287
May . . .	39	50	53	61	48	251
June . . .	56	57	49	41	43	246
July . . .	53	64	44	42	56	259
August . . .	67	66	40	41	47	261
September . .	46	55	47	35	45	228
October . . .	45	58	40	33	56	232
November . .	59	74	42	46	52	273
December . .	43	48	42	53	62	248
Total . . .	651	702	616	583	605	3,157

Winter	845	} Total, 3,157.
Spring	.	.	.	.	.	835
Summer	.	.	.	.	.	756
Autumn	.	.	.	.	.	721

Deaths.—The Mortality Bills of Glasgow were first placed upon a proper footing by the exertions of Dr. Cleland. They have been regularly published since 1821. The Bills for the four years from 1835 to 1838, were drawn up by Mr. Paul, and that for 1839 by Mr. Watt. The Bills for the last five years exhibit numerous tables, distinguishing, among other things, the diseases of which the parties died, and they contain much useful and interesting information.

The following Table, exhibiting the amount of the estimated population and the rate of the mortality in Glasgow during the last eighteen years, is extracted from the Mortality Bills. It will be observed that the rate of mortality is calculated from the deaths, and not from the burials. The burials of still-born, which are excluded, amounted, during the eighteen years, to 8,763.

Years.	Population.	Deaths.	Rate of Mortality.	Years.	Population.	Deaths.	Rate of Mortality.
1822	151,440	3,408	1 in 44·436	1831	202,420	5,981	1 in 33·845
1823	156,170	4,286	„ 36·437	1832	209,230	9,654	„ 21·672
1824	161,120	4,354	„ 37·005	1833	216,450	6,050	„ 35·776
1825	166,280	4,571	„ 36·374	1834	223,940	6,167	„ 36·312
1826	171,660	4,220	„ 40·677	1835	235,000	7,198	„ 32·647
1827	177,280	4,787	„ 37·033	1836	244,000	8,441	„ 28·906
1828	183,150	5,534	„ 33·095	1837	253,000	10,270	„ 24·631
1829	189,270	4,991	„ 37·922	1838	263,000	6,932	„ 37·939
1830	195,650	4,714	„ 41·504	1839	272,000	7,525	„ 36·146

“In this table the population from 1822 to 1830, and from 1832 to 1834, both inclusive, was obtained by interpolating a series based on the Government enumerations of 1801, 1811, 1821, and 1831; that for 1835, 1836, and 1837 has been rated a little higher than the series warranted, as being in all likelihood near the truth.”*

The increase in the mortality of late years will probably have checked the progressive amount of the population.

Table of the Deaths under 5 Years of Age, and their Ratio to the Population.

YEARS.	Number of Deaths under 5 Years.	Proportion of Deaths under 5 Years to Population.	YEARS.	Number of Deaths under 5 Years.	Proportion of Deaths under 5 Years to Population.
1822	1,491	1 in 101·63	1831	2,540	1 in 79·68
1823	1,984	„ 78·71	1832	3,293	„ 63·53
1824	1,979	„ 81·41	1833	2,807	„ 77·11
1825	2,033	„ 81·79	1834	2,748	„ 81·49
1826	1,630	„ 105·31	1835	3,493	„ 67·27
1827	2,105	„ 84·21	1836	3,889	„ 62·74
1828	2,305	„ 79·45	1837	3,875	„ 65·29
1829	1,886	„ 100·35	1838	3,133	„ 83·94
1830	2,000	„ 97·82	1839	3,777	„ 72·01

* Mortality Bill, 1837.

From the foregoing table it appears that the mean annual mortality in Glasgow—

From 1822 to 1830, both inclusive, was . . 1 in 38·275
 1831 „ 1839 „ „ „ . . 1 „ 31·986

The mean annual mortality under five years of age—

From 1822 to 1830, both inclusive, was . . 1 in 90·07
 1831 „ 1839, „ „ „ . . 1 „ 72·56

The deaths under five years of age for the nine years ending in 1830, were 42·91 per cent. of the whole deaths, and for the nine years ending 1839, 43·32 per cent.

Table of the Increase of Deaths, with the Ages, in each Year from 1835 to 1839.

Years.	AGES.											Total.
	Under 1 Year.	1-2	2-5	5-10	10-20	20-30	30-40	40-50	50-60	60-70	70 and up- wards.	
1835	362	342	41	163	142	29	18	13	..	..	43	1,153
1836	60	160	176	..	..	190	190	124	134	138	117	1,289
1837	1	34	..	..	129	252	397	399	299	240	197	1,948
1838	..	..	..	..	..	..	..	..	..	..	3	3
1839	232	226	185	135	49	..	..	..	..	26	24	878
Total	655	762	403	298	320	471	605	536	433	404	384	5,271

Table of the Decrease of Deaths, with the Ages, in each Year from 1835 to 1839.

Years.	AGES.											Total.
	Under 1 Year.	1-2	2-5	5-10	10-20	20-30	30-40	40-50	50-60	60-70	70 and up- wards.	
1835	..	..	..	..	..	..	..	..	59	30	33	122
1836	..	..	..	15	31	..	..	..	..	..	..	46
1837	..	..	49	57	30	..	..	..	..	..	1	119
1838	272	393	77	64	186	397	511	393	419	345	284	3,341
1839	..	..	..	..	..	32	62	130	7	..	54	285
Total	272	393	126	136	220	429	573	523	485	375	372	3,913

Deducting the decrease from the increase there remains a total increase of 1,358.

From these tables it appears, that of the increase of deaths in 1835, amounting to 1,153, 908 were under 10 years of age, and 245 above that age; of the increase in 1836, amounting to 1,289, 396 were under 10, and 893 above 10; while in 1837, of the increase, amounting to 1,948, 35 were under 10, and 1,913 above that age. In 1838 the increase was 3 at upwards of 70 years of age, while there was a decrease at every other age, amounting in all to 3,341. In 1839, of the increase, 779 were under 10 years of age, and 99 above it.

Early in 1838 I stated, in a published paper, that the rate of mortality in Glasgow had already for the present reached its maximum, and that during the next year or two the mortality bills would, as usual after the cessation of any epidemic disease, exhibit a marked diminution in the ratio of deaths to the population. This has been proved by the publication of the Bills for 1838 and 1839.

It was also stated "That in the course of a few—a very few—years, the same cycle of disease would again revolve, and again would pestilence revisit the city." The Mortality Bill for 1839 corroborates the truth of this assertion, and an inspection of the preceding tables shews that the increased mortality of 1839 had fallen on the population under 10 years of age. The state of the infirmary now (16th Sept. 1840), proves that the mortality has extended to the more productive ages, and another epidemic is progressing without one single effort having yet been made to stay its progress; and, judging from the past, no measures will be taken until the epidemic reaches such a height as to defy our utmost efforts.

Mortality of the different Months and Seasons.—The number of deaths is influenced very materially by the seasons of the year. Numerous researches have been made upon the subject, and, as the result of these, it may be assumed that in our climate the winter months, in which the want of shelter, of fuel, of clothing, and of food is most severely felt, are by far the most fatal to human life. In London, prior to 1666, and before the improvements which were introduced in the width of the streets after the great fire, the months of August and September were the most unhealthy. It was in these months that plague and dysentery reached their greatest height. The plague has been unknown in London since 1679, and dysentery, which formerly carried off 2,000 per annum on an average of 25 years, during the last twenty years of the 18th century, numbers only, on an annual average, 30 victims; and the most fatal months in London are now January, February, and March.

To shew the influence of the seasons upon mortality in Glasgow, the following Table has been constructed. It exhibits the months in the order of their fatality, during two periods of nine years, ending respectively in 1830 and 1839; and it will be observed, that in the latter period several changes of position occur. The most remarkable of these is in the position of the month of August. From 1822 to 1830 August stood fourth in order of mortality; from 1831 to 1839 it stood second; and, had it not been for the extraordinary mortality from influenza in January 1837, it would have ranked as the most fatal month. In 1825-28-31-32 August was the month in which the mortality was greatest; it was second in 1834 and 1839. The prevalence of dysentery, diarrhoea, and cholera has been the cause of this extraordinary mortality in August. May has changed its relative situation from the prevalence of influenza in 1833, and, above all, from the mortality from fever during that month in 1837, being the month succeeding the great strike of the cotton-spinners, by which 8,000 individuals, chiefly females, were thrown out of employment. The deaths from fever rose in May to 1 in 3·223 of the total deaths in that month.

Table of Mortality of each of the Twelve Months for Eighteen Years, drawn from the Burials, the Number of the Still-born not having been given Monthly prior to the Year 1835.

Nine Years ending with 1830.		Nine Years ending with 1839.	
MONTHS.	Burials.	MONTHS.	Burials.
January	4,382	January	8,040
February	3,813	August	7,163
March	3,005	February	6,395
August	3,830	March	6,380
September	3,760	December	6,162
December	3,733	May	5,836
April	3,676	July	5,781
October	3,626	November	5,726
November	3,524	April	5,710
July	3,421	October	5,604
May	3,352	September	5,559
June	3,116	June	5,352
Total . .	44,138	Total . .	73,708
Still-born	3,273	Still-born	5,490
Under 5 Years . .	17,413	Under 5 Years . .	29,555
5 Years and upwards	23,452	5 Years and upwards	38,663
Total . .	44,138	Total . .	73,708

The mortality of the seasons is given below—

	Nine Years ending with 1830.		Nine Years ending with 1839.	
		Per Cent.		Per Cent.
Winter . . .	11,639	26·37	19,928	27·03
Spring . . .	11,394	25·81	18,475	25·07
Autumn . . .	11,216	25·41	18,336	24·88
Summer . . .	9,889	22·41	16,969	23·02
Total . .	44,138	..	73,708	..

Burials at the Public Expense.

In 1837 about 26·30 per cent. of the Burials were at the public expense.

1838	„	23·20	„	„	„
1839	„	21·66*	„	„	„

The above statement is impressive; it connects poverty with mortality.

II.

It has been shewn in the preceding tables that the rate of mortality, always high in Glasgow, has increased most materially during the last nine years. It therefore becomes a question of some import-

* Mortality Bill, 1839, by Mr. Watt.

ance to ascertain upon what causes the high rate of mortality has all along depended, and to what influences the increased mortality of late years is to be ascribed.

The rapid increase in the amount of the labouring population, without any corresponding amount of accommodation being provided for them; the density, and still increasing density of that population; the state of the districts which it inhabits; the fluctuations of trade and of the prices of provisions, and the lamentable "strikes" in consequence of combination among the workmen, by which the means of subsistence have been suddenly withdrawn from large masses; the recklessness and addiction to the use of ardent spirits, at once the cause and the effect of destitution; the prevalence of epidemic diseases both among the adult and infantile portion of the community, have been the chief causes of the great mortality in the city of Glasgow.

During the last five years a diminished temperature and increased quantity of rain, aided by the high price of fuel, have tended to swell the lists of mortality, and probably other atmospheric phenomena, though not appreciable by scientific instruments, have also been in active operation.

Mr. Sadler, in his work on the "Law of Population," has examined the relations which exist between the number of marriages, births, and deaths, and found that those countries in which the marriages are most numerous are precisely those in which the mortality is greatest.

In the table exhibiting the ratio of marriages to the population in Glasgow, it will be seen that the proportion has been as high as 1 in 83, 1 in 92, 1 in 93 of the population, and that it is always much above the average of England or any of the Continental States.

For five years previous to 1831—

The average of England was 1 Birth in 37	Glasgow, in 1831, 1 in 29·47
„ „ 1 Burial in 54	„ „ 1 „ 30·91*
„ „ 1 Marriage in 129	„ „ 1 „ 105

While among the classes in easy circumstances the age of marriage is deferred from prudential motives, no such cause influences the labouring classes, who marry early and make no provision for their children; hence births and deaths follow each other in rapid succession, the death of one child, after existing for a few months, making way for the birth of another, each event increasing the poverty and recklessness of the parents, until at last they themselves either become the victims of epidemic fever, or swell the lists of applicants for relief from the poor's rates. The above is no fanciful picture, it is drawn from reality; and if the subject were investigated upon a large scale, it would be found as the results of the improvident marriages of the labouring classes, that the number of children born to them has been very great, while the number reared has been comparatively very small. The contrast between the labouring classes and those in easy circumstances, is in no particular so strongly marked as in the relative number of the births and deaths of their children. On an average of the last five years, the deaths under one year of age form 17·740 per cent. of the whole deaths.†

* Including still-born.

† Mortality Bill.

To the ordinary ailments of life, which are daily and hourly in operation in reducing the period of human existence, there have been added in numerous instances severe epidemics, affecting both the adult and infantile population, and to these we shall now direct attention. The first disease of which I shall attempt to give the statistics is "Fever." The Royal Infirmary of Glasgow for the reception of medical and surgical patients, was opened in the month of December 1794, and contained accommodation for 150 patients. An addition was made to it in 1816, capable of containing 80 beds. One-half of the fever hospital attached to the infirmary was opened in 1829, and the other in 1832; and with some additional accommodation since afforded, the whole can now receive 220 patients.

The permanent hospital accommodation was—

From 1795 to 1816	. . .	150	beds.
1816 „ 1829	. . .	230	„
1829 „ 1832	. . .	330	„
1832 to the present time	450	„	„

But besides this permanent hospital accommodation, it has on various occasions been absolutely necessary to provide temporary hospitals, and also to appropriate apartments within the infirmary for the reception of fever patients, which apartments were never intended for such purposes. These demands for additional room have been solely caused by the prevalence of typhus fever, with the exception of the hospitals required in 1832 for the reception of patients affected with cholera.

In 1818 a temporary fever hospital, fitted to contain 200 patients, was erected at Spring Gardens by public subscription. It was opened on the 30th March 1818, and closed on the 12th July 1819. This hospital was again opened in 1827 at the expense of the infirmary, and kept open for five months. In 1828 a temporary booth, capable of containing 68 patients, was erected in the infirmary grounds. A fever hospital, with 135 beds, was opened at Mile-End on the 9th January 1832, and closed in the same year. A fever hospital, capable of containing 60 patients, was opened in Albion-street on 1st March 1837, and appropriated to the reception of males: it was closed 14th April 1838.

Notwithstanding the above amount of hospital accommodation, that portion of it allotted for the reception of fever patients has on various occasions, been found insufficient, and numerous applicants for admission have been thrown back upon their own resources, left to spread the contagion of typhus around their miserable dwellings, thereby augmenting the sum of human misery already existing in its most appalling forms.

The first of the following tables exhibits the total number of patients treated in the Royal Infirmary, from its opening in December 1794 to the 1st January 1840, distinguishing the number of fever patients treated each year. The second table shews the numbers treated in the temporary fever hospitals of Spring Gardens and Mile-End in 1818-19 and 1832. Those admitted into the hospital at Spring Gardens in 1827, and into the Albion-street Hospital in 1837-38, having been treated at the expense of the infirmary, were of course included in the infirmary returns.

Table of the Total Number of Patients treated in the Glasgow Royal Infirmary, distinguishing the Number of Fever Patients, in each Year from 1795 to 1839.

Years.	Total.	Fever Patients.	Total.	Fever Patients.	Years.	Total.	Fever Patients.	Total.	Fever Patients.	Years.	Total.	Fever Patients.	Total.	Fever Patients.
1795	226	18	2,309	317	1800	733	104	3,648	453	1805	719	99	3,871	302
1796	338	43			1801	702	63			1806	700	75		
1797	545	83			1802	729	104			1807	726	25		
1798	569	45			1803	806	85			1808	840	27		
1799	631	128			1804	678	97			1809	886	76		
1810	935	82	4,795	268	1815	1,340	230	8,887	3,344	1820	1,570	289	8,470	1,544
1811	826	45			1816	1,511	399			1821	1,454	234		
1812	877	16			1817	1,896	714			1822	1,596	229		
1813	1,022	35			1818	2,289	1,371			1823	1,759	269		
1814	1,135	90			1819	1,861	630			1824	2,091	523		
1825	2,438	897	12,934	5,283	1830	2,010	729	15,128	7,266	1835	3,260	1,359	23,911	13,447
1826	2,317	926			1831	3,183	1,657			1836	5,130	3,125		
1827	2,725	1,084			1832	2,974	1,589			1837	7,200*	5,387*		
1828	3,133	1,511			1833	3,082	1,288			1838	4,153	2,047		
1829	2,321	865			1834	3,879	2,003			1839	4,168	1,529		

* Including 906 male fever patients treated in Albion-street temporary Hospital, at the expense of the Infirmary.

Table exhibiting the Number of Fever Patients admitted into the Temporary Fever Hospitals at Spring Gardens and Mile-End.

Spring Gardens in 1818-19	1,929	} 3,074
Mile-End „ 1832	1,145	

From 1795 to 1809, being a period of 15 years, the fever patients are 10·90 per cent. of the whole number of patients treated in hospital.

From 1810 to 1824	23·27
1825 „ 1839	50·01
In the Year 1837	74·81

The hospital accommodation was inadequate in 1819, 26-27, 31, and 36-37. From 1827 to 1840, 9,665 patients were treated in their own houses by the district surgeons of the burgh.

Table shewing the Number of Fever Patients treated in Hospital at various periods, and their Ratio to the Population.

YEARS.	Population.	Fever Patients.	Ratio of Fever Patients, treated in Hospital, to Population.	REMARKS.
1801	83,769	69	1 in 1214·04	{ No adequate Hospital accommodation. Ditto.
1811	110,460	62	„ 1781·61	
1821	147,043	929	„ 158·28	
1831	202,426	1,098	„ 184·35	Ditto.
1835	235,000	1,359	„ 172·92	
1836	214,000	3,125	„ 78·08	
1837	253,000	5,387	„ 46·7	
1838	263,000	2,047	„ 128·48	
1839	272,000	1,529	„ 177·89	

Table of the Number of Fever Patients in Hospital during the last 45 Years.

From 1795 to 1799, both inclusive	317	1,072	35,298
1800 „ 1804	453		
1805 „ 1809	302		
1810 „ 1814	268	7,085	
1815 „ 1819	5,273		
1820 „ 1824	1,544		
1825 „ 1829	5,283	27,141	
1830 „ 1834	8,411		
1835 „ 1839	13,447		

The above number of fever patients has been drawn from the city and suburbs of Glasgow, with the addition of a very small proportion from the surrounding neighbourhood. But, in addition to the number treated in the permanent and temporary hospitals, the next table exhibits the number of fever patients, who, for a period of 12 years, have been treated by the district surgeons, within the burgh, at the public expense; distinguishing the number sent by those gentlemen to the hospitals. All the patients so treated may be considered as paupers, since before they are attended by the district surgeons, a certificate is required from the Elder of their district, certifying that they are unable to pay for medicines and advice; and the salaries of the surgeons and the cost of the medicines prescribed are paid out of the poor's-rates. It must be remembered that all the patients included in this table reside within the burgh, the population of which, at the census of 1831, was 89,847, of whom 12,554 were Irish; while the suburbs contained 112,579, of whom 23,000 were Irish; making a total population of 202,426, among whom were 35,554 Irish.

No effective measures have yet been taken to place the indigent poor of the suburbs under a system of medical superintendence, similar to that within the burgh, though the necessity for it must be apparent from the above statement.

Table exhibiting the Number of Cases of Fever treated by the District Surgeons, from 1 Aug. 1827 to the 1 Aug. 1832, in the four years from 1833 to 1836; and from 1 Nov. 1836 to 1 Nov. 1839; distinguishing the numbers sent to the Infirmary, and treated in their own houses.

YEARS.	Number of Cases.	Sent to the Infirmary.	Treated at Home.	YEARS.	Number of Cases.	Sent to the Infirmary.	Treated at Home.
1827-28	1,281	281	1,000	1835	542	215	327
1828-29	1,730	390	1,340	1836	1,359	643	716
1829-30	485	135	350	1837	3,331	1,049	2,282
1830-31	898	306	592	1838	1,327	456	871
1831-32	1,428	336	1,092	1839	466	166	300
1833	681	294	387	Total	14,464	4,809	9,655
1834	936	538	398				

Such is the melancholy catalogue of fever patients treated in the hospitals of Glasgow, and in their own houses, by the district surgeons of the burgh, exclusive of the suburbs.

The next table exhibits the deaths from fever within the Bills of Mortality, including both the city and suburbs, and, founded upon these, an estimate of the total number of fever cases during the last five years.

Table of the Deaths from Fever recorded in each Year, from 1835 to 1839.

1835	412, being 1 to 15·571 of the deaths, and 1 to 570·388 of the population	
1836	841 „ 10·036 „ 290·130 „	
1837	2,180 „ 4·711 „ 116·055 „	
1838	816 „ 8·495 „ 322·303 „	
1839	539 „ 13·961 „ 504·638 „	

Total 4,788

The total number of deaths recorded to have taken place from fever during the last five years, amount to 4,788; a number certainly not over stated, when we reflect that the deaths from diseases not ascertained amount, during the same period, to 1,998, being 4·949 per cent. of the whole deaths.

Upon the assumption that the rate of mortality from fever was 1 in 15 of those attacked in 1835; 1 in 12 in 1836; 1 in 10 in 1837; 1 in 12 in 1838; and 1 in 15 in 1839; which calculations will be found nearly correct, the number of individuals who have been affected with fever in Glasgow during the last five years will be as follows:—

In 1835	6,180	} 55,949
1836	10,092	
1837	21,800	
1838	9,792	
1839	8,085	

The mind cannot contemplate without horror the amount of human misery which the above statement so forcibly exhibits.

Of the above number of 55,949 cases of fever, there have been treated in hospitals 13,447; and in their own houses, at the public expense, in the city (exclusive of the suburbs) 4,496; total at the public expense, 17,943: while, from want of hospital accommodation, and want of proper medical superintendence, many have perished miserably whom “food, fuel, and clothing,” would, in all human probability, have saved.

Table of the Deaths from Fever in each Month, distinguishing the Males and Females, and giving the Monthly Proportion which the Deaths from Fever bear to the whole number of Deaths, in each Year from 1836 to 1839.

MONTHS.	1836			1837			1838			1839		
	Male.	Fem.	Total.	Male.	Fem.	Total.	Male.	Fem.	Total.	Male.	Fem.	Total.
January .	31	14	45	108	93	201	86	78	164	10	11	21
February .	16	11	27	77	61	138	68	67	135	14	17	31
March .	33	24	57	124	100	224	76	48	124	20	12	32
April .	27	37	64	114	88	202	53	42	95	17	13	30
May .	39	28	67	120	113	233	40	33	73	24	11	35
June .	38	33	71	109	90	199	21	15	36	24	17	41
July .	31	30	61	106	88	194	14	22	36	22	20	42
August .	51	31	82	101	71	172	24	18	42	13	16	29
September.	32	24	56	73	53	126	10	17	27	22	16	38
October .	52	37	89	74	75	149	20	10	30	27	40	67
November.	42	47	89	83	64	147	10	15	25	53	30	83
December.	73	60	133	98	97	195	17	12	29	54	36	90
Total .	465	376	841	1187	993	2180	349	377	816	300	239	539

The Preceding Table continued.

MONTHS.	1836	1837	1838	1839
	Proportion to whole Deaths.	Proportion to whole Deaths.	Proportion to whole Deaths.	Proportion to whole Deaths.
January . .	1 in 17·55	1 in 9·81	5·481	26·380
February . .	,, 24·74	,, 7·13	6·229	19·419
March . .	,, 11·82	,, 4·20	5·782	20·031
April . .	,, 10·00	,, 4·08	6·031	20·400
May . .	,, 10·29	,, 3·22	7·301	15·542
June . .	,, 8·91	,, 3·34	12·055	13·390
July . .	,, 11·14	,, 3·67	11·416	15·500
August . .	,, 8·89	,, 4·93	10·928	24·586
September . .	,, 11·46	,, 5·11	17·555	15·078
October . .	,, 7·71	,, 3·79	16·500	9·373
November . .	,, 8·86	,, 4·28	19·960	8·048
December . .	,, 6·15	,, 3·73	20·586	8·777

Deaths of Males, 2,391 ; Females, 1,985 :—Total Deaths, 4,376.

Many interesting observations may be drawn from this table. It shews the slow progress of an epidemic disease when trade is prosperous, compared with what occurs in seasons of distress. Up to November 1836, the period at which the commercial embarrassments were felt, the mortality from fever had not been rapidly increasing. In November it was just about double what it had been in the January preceding, the number of deaths being 45 in January, and 89 in November. The moment, however, that the effects of the stagnation in trade extended to the working classes, the mortality increased with fearful rapidity, aided, no doubt, by the season of the year, the high price of grain, and the scarcity or high price of fuel. The deaths from fever in the four months preceding the 1st December 1836 were 316 ; in the four months following, 696.

The table also marks the period at which the epidemic reached its maximum amount of mortality, namely, in the second quarter of 1837, and in the month of May in that quarter, being the month succeeding that in which the strike of the cotton-spinners took place, by which 8,000 individuals were thrown out of employment.

The establishment of soup-kitchens, and the provision of work for the unemployed operatives in the months of May, June, and July, must have materially aided in arresting the progress of the epidemic.

Many expect that fever is to subside suddenly, but an examination of the above table and of the Mortality Bill for 1838, will prove the fallacy of such opinions by exhibiting a gradual diminution in the numbers attacked.

The table also exhibits the relative proportion of male and female deaths from fever, in the four years from 1836 to 1839 ; to which has been added, in the next statement, a similar account for 1835. During the last five years the deaths of males from fever have been 54·49 per cent., and of females 45·51 per cent., of the whole deaths from fever. While the mortality of the males from fever has in each year exceeded that of the females, it has done so in a variable proportion, as will be seen from the following Table :—

Table of the Per-centage of the Deaths of Males and Females from Fever.

Years.	Males.	Females.
1835	52·93	47·08
1836	55·29	44·70
1837	54·44	45·55
1838	53·79	46·21
1839	55·65	44·35

The above table and the Mortality Bills confirm the opinion formerly given founded upon the statistics of the fever hospital, that mortality from fever, at every period of life, is greater among males than among females.

III.

Fever Hospital.—Of 5,014 patients treated in the fever hospital by Doctors Cowan and Anderson, in the five years from 1835 to 1839, there were—

	Scotch.	English.	Irish.	Total.
Males . . .	1,685	58	734	2,477
Females . . .	1,848	28	661	2,537
Total . . .	3,533	86*	1,395	5,014

Of the above admissions into the fever hospital—

The Scotch form	70·46 per cent.
English	1·72 „
Irish	27·82 „

The proportion of Irish treated in the fever hospital is much less than what is generally believed by those who have not paid attention to the subject.

Dr. Lombard, of Geneva, estimates the number of Irish resident in Glasgow at 60,000, and ascribes the prevalence, and what he deems the peculiarities of our fever, to their presence in such large numbers.† The author of the article “Vital Statistics,” in M’Culloch’s Statistics of the British Empire, vol. ii. p. 527, makes the following remarks :— “The increasing mortality in Glasgow is, no doubt, in part due to the accession of Irish population, who amounted in 1831 to more than one-sixth of the inhabitants. The poor Irish, we strongly suspect, are keeping up, if they be not introducing, the fevers of their wretched country in the heart of the British cities. This is confirmed in the case of Glasgow, by the ages at which the mortality is augmented, and by a Report of the Glasgow Infirmary before us, from which it appears that in the year 1835, out of 3,260 patients treated, 1,258 had fevers, and of these 125 died.” The Irish in Glasgow belong almost entirely to the labouring classes, and so far they must, from their numbers, have increased the number of fever patients; but, from ample opportunities of observation, they appear to me to exhibit much less of that squalid misery and habitual addiction to the use of ardent spirits than the Scotch of the same grade.

Of the patients sent into the fever hospitals, some are labouring under small-pox, scarlet fever, measles, and others have ailments mistaken for fever before admission. The following Tables refer solely to those patients labouring under fever :—

* Including 12 foreigners.

† Dublin Medical Journal for September 1836.

Table exhibiting the Ages of the Fever Patients.

AGES.	MALES.				FEMALES.			Total.
	Dr. Cowan.	Dr. Anderson.	Dr. Weir.	Total.	Dr. Cowan.	Dr. Anderson.	Total.	
From 1 to 5	10	13	..	23	31	7	38	61
5 ,, 10	92	80	76	248	99	58	157	405
10 ,, 15	149	137	102	388	169	124	293	681
15 ,, 20	229	187	161	577	272	273	545	1,122
20 ,, 25	237	212	206	655	188	233	421	1,076
25 ,, 30	132	153	135	420	158	144	302	722
30 ,, 35	84	116	107	307	60	120	180	487
35 ,, 40	80	85	79	244	85	84	169	413
40 ,, 45	39	73	71	183	23	69	92	275
45 ,, 50	39	38	29	106	27	34	61	167
50 ,, 55	12	17	26	55	9	25	34	89
55 ,, 60	7	11	9	27	15	5	20	47
60 ,, 65	3	13	2	18	3	4	7	25
65 ,, 70	1	7	1	9	1	4	5	14
70 ,, 75	2	1	2	5	1	3	4	9
Unknown . .	..	5	..	5	..	7	7	12
Total . .	1,116	1,148	1,006	3,270	1,141	1,194	2,335	5,605

Mortality from Fever.

AGE.	MALES.			FEMALES.			TOTAL.		
	Treated.	Dead.	Per-centage Mortality.	Treated.	Dead.	Per-centage Mortality.	Treated.	Dead.	Per-centage Mortality.
Under 5 Years	23	3	13.04	38	2	5.26	61	5	8.19
5 & under 10	247	5	2.02	157	7	4.45	404	12	2.97
10 ,, 15	388	12	3.09	293	14	4.77	681	26	3.81
15 ,, 20	577	43	7.45	544	34	6.25	1,121	77	6.86
20 ,, 25	654	64	9.78	421	31	7.36	1,075	95	8.83
25 ,, 30	419	71	16.94	300	29	9.66	719	100	13.90
30 ,, 35	301	57	18.93	176	23	13.06	477	80	16.77
35 ,, 40	241	75	31.12	168	22	13.09	409	97	23.71
40 ,, 45	183	54	29.50	91	24	26.37	274	78	28.46
45 ,, 50	102	41	40.19	60	17	28.33	162	58	35.80
50 ,, 55	55	16	29.09	34	9	26.47	89	25	28.08
55 ,, 60	26	12	46.15	18	7	38.88	44	19	43.40
60 ,, 65	17	5	29.41	7	2	28.57	24	7	29.16
65 ,, 70	8	6	75.00	5	3	60.00	13	9	69.23
70 ,, 75	4	3	75.00	4	..	..	8	3	37.50
Unknown .	1	1	100.00	6	2	33.33	7	3	42.85
Total .	3,246	468	14.41	2,322	226	9.73	5,568	694	12.46
Dead within 24 hours . }	24	24	or 1 in 7	13	13	or 1 in 10	37	37	or 1 in 8
Total .	3,270	492	15.04	2,335	239	10.23	5,605	731	12.90

Contagion.—Of the whole number of fever patients treated—

By Dr. Cowan	47·	} per cent., either ascribed the origin of their disease to contagion, or had been exposed to its influence.
Dr. Anderson	45·3	
Dr. Weir	44·8	

The average residence of Dr. Cowan's patients in hospital was 18 days.

In the existing epidemic fever, an exanthematous eruption is present in a vast majority of the patients admitted into the hospital. This eruption generally makes its appearance from the fourth to the ninth day of the disease; occasionally, according to my own observations and those of Chomel, appearing at a later period.

Table of Fever Patients with and without Eruption.

	WITH ERUPTION.			WITHOUT ERUPTION.			Doubtful.
	Males.	Females.	Total.	Males.	Females.	Total.	
Dr. Cowan .	850	819	1,669	266	322	588	..
Dr. Anderson ..	..	..	1,885	..	..	324	143
Dr. Weir . .	648	..	648	358	..	358	..
Total . .	1,498	819	4,202	624	322	1,270	143

Of the comparative mortality of patients, with and without eruption, I have no table. The following was drawn up by Dr. Anderson, to whom I am indebted for it. It exhibits, however, neither the ages nor the sexes.

Of 1,885 patients with eruption there died 275, being 14·58 per cent.

324	,,	without	,,	11	,,	03·39	,,
143	,,	eruption doubtful	,,	7	,,	04·89	,,

During the period of Dr. Cowan's attendance on the fever hospital every applicant was admitted. During Dr. Anderson's, numbers were refused admittance from want of room; and during the last nine months, the period of Dr. Weir's attendance, every applicant has been again accommodated.

From the tables it appears that the rate of mortality depends upon the age and sex of those admitted; and hence arises the absurdity of contrasting the mortality of different hospitals, and of different practitioners, when we have not before us the data to enable us to form a competent decision.

IV.

It has been already stated that the burgh, exclusive of the suburbs, is divided into 12 districts, to each of which a medical practitioner is appointed, who is paid for his services out of the poor's-rates. In the accompanying Map of the city and suburbs,* the burgh divided into

* This Map is necessarily omitted, but the following description of the several districts will explain the divisions to those persons who are acquainted with the town. The divisions of these districts are not parochial but arbitrary; their popu-

districts is exhibited, and the number of cases treated by the medical practitioners in each district during the last three years, distinguishing the number of fever patients, is given in the following Table :—

Districts.	Total Cases.	Fever Cases.	Districts.	Total Cases.	Fever Cases.
No.			No.		
1	1,269	507	8	1,431	480
2	1,241	423	9	1,256	369
3	2,386	718	10	1,276	431
4	923	354	11	1,026	256
5	928	382	12	824	308
6	1,240	285			
7	1,805	611	Total	15,605	5,124

From the above table it appears that about 33 per cent of the patients treated by the district surgeons are fever patients, exclusive of scarlet fever, measles, and small-pox. The latter epidemics, being the diseases of children, are not generally attended to, as appears from Mr. Connell's return for 1836-7; and what is still more striking, when we take the mortality of small-pox into account, it is no part of the duty of the district surgeons to vaccinate the children of the poor.*

An inspection of the Map shews how small and how densely crowded is the space on which the largest portion of the fever patients are located. Districts Nos. 1, 2, 3, 4, and 8, share among them 2,739 of the

lation therefore cannot be defined, but the burgh certainly does not contain more than 110,000, while the suburbs contain 162,000.

No. 1 contains the east side of the Salt-market and south side of the Gallowgate, as far as the boundary of the city and Calton. Nearly all the fever cases in it are drawn from the Salt-market and Gallowgate.

No. 2 contains the west side of the Salt-market, the east side of King-street, and the south side of Bridgegate.

No. 3 the Wynds of Glasgow, described by Mr. Symonds in his Report on the State of the Hand-loom Weavers.

No. 4 includes all the burgh to the west of Stockwell-street, bounded by the river and Argyll-street: a large district, better ventilated, &c. &c.

No. 5, Suburban, to the east of Glasgow; large; houses not crowded.

No. 6 contains north side of Gallowgate, bounded on the west by Molendinar Burn, which in this district is a large open common sewer; district not crowded, except in Gallowgate.

No. 7. Vennals of Glasgow. District small; houses crowded; bounded by the Molendinar Burn, which occasionally inundates houses on its banks. This district is the worst in the town since public attention has been directed to the Wynds.

No. 8. Bounded by the Molendinar Burn, Gallowgate, Trongate, Nelson-street, Bell-street, High-street, and street opened through College-garden.

No. 9. Bounded by Trongate, Argyll-street, Mitchell-street, West Nile-street, George's-street, High-street, Bell-street, and Nelson-street. Extensive.

No. 10. Bounded by Duke-street, High-street, and extending into the country. Patients from Duke-street, High-street, Drygate, Ladywell, &c.

No. 11. A large district; houses recently built; inhabitants employed.

No. 12. Ditto.

* The duties of the district surgeons are laborious and dangerous. Nearly all of them take fever, which involves a heavy pecuniary loss. Their salary is 21*l.* per annum, being less than 1*s.* for the treatment of each case. The comparatively small number of children's diseases treated arises from the circumstance of the parents not applying to the district surgeons.

total number. The district in which the College is situated, the smallest in the Map, is by far the most wretched. This opinion is based upon the number of the fever patients in it; and it is also corroborated by the practical experience of Captain Miller, the head of the Glasgow Police.

During the prevalence of cholera, and indeed of all epidemics, the same districts are the most unhealthy, and are always the most distinguished in the annals of crime and pauperism.

V.

Influenza.—Epidemic catarrh, or influenza, visited this city in the month of December 1836, but its effects on the Mortality Bill were barely perceptible till the month of January 1837. It continued to prevail during February and the first weeks of March, but in a modified degree. In April the deaths from influenza were only 13. The total number of deaths recorded from catarrh (influenza) in 1837, amounted to 389, of which 229 took place in January, proving that the great force of the epidemic was expended during that month. The deaths in the month of January were 1,972, being an increase of 1,182 over the month of January 1836; and of 1,153 over the month of December immediately preceding.

The following Table shews the recorded deaths from catarrh (influenza) during the months of January, February, and March, distinguishing males from females.

1837	Males.	Females.	Total.
January . .	111	118	229
February . .	37	62	99
March . .	9	20	29
	157	200	357
Other Months	16	16	32
Total .	173	216	389

The above table proves that the influenza, unlike fever, was more fatal to females than to males; the deaths of the former being 55·52 per cent., and of the latter only 44·47 per cent. of the deaths from influenza: but notwithstanding this, the total number of deaths, during the prevalence of influenza, bore the same relative proportion of the sexes as usual; the male deaths being 1,023, and the female 949, in January; and in February, 489 males, and 495 females.

It is quite obvious that the deaths recorded from catarrh (influenza) in January, do not nearly account for the increased mortality of that month. It will therefore be necessary to give a table of the number who died in January and February 1837, with their ages and the diseases of which they died, and to compare this statement with a similar one for January and February 1836, noting the increase or decrease under each disease, and at each age.

The foregoing table for January shews that the mortality from all diseases (with the exception of scarlet fever, which exhibits a diminution of 54), had materially increased, when compared with that of the corresponding month in the previous year; and that, while the number recorded dead from catarrh (influenza) as a primary disease was only 229, the effects of the epidemic were severely felt by the aged, the asthmatic, and the consumptive, the deaths under these heads being 706, shewing an increase of 473 upon 233, the number in January 1836. The epidemic influence produced bowel complaints in the young, the deaths from these ailments being doubled over those of January 1836; and of 143 deaths from bowel complaints, 136 took place under 5 years of age, and only 7 above it. The deaths in child-birth in 1837 were 93 in number, being an increase of 16 over the previous year; but owing to the great diminution in the number of births during 1837, the increased rate of mortality in child-birth was in truth much greater than the above numbers indicate. Of the 93 deaths in child-birth during 1837, 25 occurred in January, being upwards of one-fourth of the whole number during the year.

The table for February shews a remarkable diminution in the rate of mortality, as compared with January, but a very considerable increase over February 1836. The decrease is principally, as in January, in the number of deaths from scarlet fever (27), leaving on the whole an increase of 316 over February 1836. This increase chiefly arises from fever (111), catarrh (96), old age (26), decline (15), hooping-cough (17), &c. It is not deemed necessary to give any table for March, as the epidemic had nearly abated early in that month.

To prove the influence of the epidemic catarrh (influenza) in augmenting the rate of mortality, the following Table of the Rate of Mortality is given from November 1836 till May 1837:—

1836, November . . .	1 in 25·34 of the population.
December . . .	1 ,, 25·23 ,,
1837, January . . .	1 ,, 10·89 ,,
February . . .	1 ,, 19·72 ,,
March . . .	1 ,, 22·78 ,,
April . . .	1 ,, 25·17 ,,
May . . .	1 ,, 28·61 ,,

VI.

Diarrhœa, Dysentery, Cholera.—The number of patients affected with diarrhœa, dysentery, and cholera, treated in the Royal Infirmary, from its opening in 1795 to the year 1827, was very small indeed, not amounting to more than 354. In 1827 diarrhœa and dysentery may be considered to have been epidemic in Glasgow, especially during the autumnal months. During 1827 and 1828, 214 individuals with dysentery were admitted into the Infirmary, and of these 1 in 8 of the males, and 1 in 10 of the females, died.* The disease abated in frequency and severity during 1829 and 1830, which last year was remarkably healthy.

Cholera.—Although cases of epidemic cholera had been known to occur previously to the 13th February 1832, its existence was first offi-

* Infirmary Report.

cially announced by the Board of Health on that day. It continued to prevail in the city and suburbs for nine calendar months, and attacked, according to the Returns made to the Board of Health, 6,208 individuals; the deaths, according to the Mortality Bills, amounted to 3,166. During the whole period of the continuance of cholera, diarrhoea was very prevalent among all classes, but among those in comfortable circumstances it was easily checked. To shew the effects of cholera upon the population, it may be stated that 1 out of every $32\frac{1}{2}$ persons were attacked by it, and 1 in $67\frac{1}{4}$ died of it.*

In order to exhibit the mortality there is a table given of the mortality at every age distinguished in the Bills for 1831, 1832, and 1833, pointing out the increase of deaths at each period of life in 1832, and also the number of deaths of each sex at each age from cholera.

It has been stated by many authors that epidemics do not increase the annual mortality, that they only absorb other diseases; and this assertion was made repeatedly during the progress of cholera towards Britain. A comparative view of the mortality in the corresponding months of the previous year, with those in which cholera first prevailed in Newcastle, Gateshead, Musselburgh, and some parishes in London, was not sufficient to remove the delusion. The Table now given shews the additional mortality in Glasgow over the previous year, which was a very sickly season, to have been 3,731, of which increase 3,166 were from cholera, and 565 from other diseases, raising the mortality from 6,547 in 1831 to 10,278 in 1832, and from the rate of 1 in 33·84 in 1831 to 1 in 21·67.

The number of female deaths from cholera, according to the Mortality Bills, exceeded that of the male deaths to the extent of 328, thereby nearly equalising for the year the male and female deaths, for (exclusive of the still-born) the deaths of males during 1832 amounted to 4,811, and those of females to 4,843.

Mr. Finlayson affirms that the mortality of the female sex, at every period of life, is less than that of the male at a corresponding age, excepting under 10, when there is no difference, and above 85, when he perceives no distinction;† but M. Villermé affirms, with greater truth, that at almost every age, especially the few years after birth, females die in a smaller proportion than males. "It will be curious," he adds, "to ascertain if, in the respective numbers who fall a prey to epidemic diseases, the female sex is usually spared, particularly in the first months of their existence." If it is so, it will afford another proof that the mortality peculiar to epidemics follows the general law of mortality. With the exception of epidemic chin-cough, which he states to be more fatal to females, he says he is ignorant of any facts respecting the difference of mortality in the two sexes caused by epidemics.‡

The mortality in Glasgow at each stage of early life, indeed under 50, is on the average uniformly greater among males than among females, but from cholera the female deaths, at every period of life, exceeded the male, with two exceptions, viz., under 2 years of age, when they were as 22 to 25, and at 85, when they were as 2 to 9.

* Cleland, Mortality Bill, 1832.

† Hawkins' Statistics, p. 207.

‡ Annales d'Hygiène.

In 1832 the relative proportion of the deaths under 10 years of age to the whole deaths was altered, in consequence of the increased mortality falling more heavily upon the classes above that age. 971 was the increased amount of mortality of the year under 10 years of age, and 2,760 above that age. A reference to the Table will indicate the ages which suffered most.

The Table of the Monthly Mortality proves that July, August, and September, the very months in which epidemic diseases were formerly so prevalent, were also those in which the greatest number of cases of cholera, and the greatest number of deaths, took place in Glasgow. Of 10,278 burials, 1,755 occurred in August, being more than one-sixth of the total number of burials; and of the 6,208 cases of cholera, 2,418 originated in August; while of 3,166 deaths from this disease, 1,222 took place in that month.

Table exhibiting the Mortality in Glasgow in the Years 1831, 1832, and 1833, with the Increase of Deaths in 1832 at each Period of Life; and the Number of Deaths from Epidemic Cholera at each Age, distinguishing the Sexes.

AGES.	1831	1832	Increase in 1832.	Cholera in 1832.	1833	Deaths from Cholera in 1832.	
						Males.	Females.
Still-born . .	566	624	58	..	582	..	..
Under 1 Year .	1,219	1,326	107	18	1,251	10	8
1 and under 2	755	973	218	29	730	15	14
2 ,, 5	566	994	428	83	826	40	43
5 ,, 10	265	425	160	106	291	50	56
10 ,, 20	322	433	111	132	295	61	71
20 ,, 30	426	669	443	358	432	136	222
30 ,, 40	455	979	524	529	451	235	294
40 ,, 50	461	1,037	576	639	441	284	355
50 ,, 60	463	913	450	556	406	263	293
60 ,, 70	477	827	350	444	401	207	237
70 ,, 75	238	376	138	155	217	64	91
75 ,, 80	130	263	133	62	127	25	37
80 ,, 85	127	141	14	44	119	20	24
85 ,, 90	51	68	17	11	46	9	2
90 ,, 95	16	25	9	..	16	..	..
95 ,, 100	9	2	..	..	1	..	..
100 ,, 103	1	2	..	..	..	..	..
103 ,, ..	..	1	1	..	..	..	..
Total	6,547	10,278	3,731	3,166	6,632	1,419	1,747

The following Table, extracted from the Mortality Bill for 1832, gives the number of deaths from cholera in each month:—

January . . . .	..	August	1,222
February	87	September	243
March	264	October	334
April	229	November	25
May	125		
June	196		
July	441	Total	3,166

VII.

EPIDEMICS OF CHILDREN.

1. *Small-pox*.—The following Table exhibits the total number of deaths under 10 years of age, in Glasgow, distinguishing those from small-pox, for 30 years, divided into three equal periods; and is compiled from tables prepared from the registers of this city, by the late Dr. Robert Watt, and published in the Appendix to his work on Chin-cough.

Years.	Total.	Small-Pox.	Years.	Total.	Small-Pox.	Years.	Total.	Small-Pox.
1783	719	155	1793	1,126	389	1803	940	194
1784	877	425	1794	759	235	1804	863	213
1785	744	218	1795	1,048	402	1805	884	56
1786	941	348	1796	797	177	1806	786	28
1787	1,016	410	1797	884	354	1807	899	97
1788	1,059	399	1798	864	309	1808	1,775	51
1789	1,058	366	1799	1,105	370	1809	1,187	159
1790	1,236	336	1800	746	257	1810	1,027	28
1791	1,367	607	1801	766	245	1811	1,274	109
1792	902	202	1802	985	156	1812	1,278	78
1st period	9,919	3,466	2nd period	9,080	2,894	3rd period	10,913	1,013

The ravages of small-pox were never before more vividly illustrated than in the foregoing table. In the first decennial period, the total deaths under 10 years of age amounted to 9,919, and the deaths from small-pox to 3,466, being 35 per cent., and rather more than one-third of the whole deaths under 10. In the second period, the total deaths under 10 were 9,080, and the deaths from small-pox 2,894, or 31·87 per cent.; and in the last period, the total deaths under 10 were 10,913, and the deaths from small-pox 1,013, or only 9·28 per cent. The saving of human life in infancy by the introduction of vaccination is thus most satisfactorily established, as the table shews an improvement to the extent of 25 per cent., and if to this be added the lives saved above 10 years of age, which we have no means of exhibiting from the Glasgow Mortality Bills, we shall be able to judge of the benefits conferred on society by Jenner.

I am not aware that small-pox has been so fatal in any town as it appears to have been in Glasgow. In Berlin, the deaths from small-pox were for a short time as 1 in 4, but more generally as 1 in 7, of the whole deaths under 10 years of age; while in the city and suburbs of Glasgow, it was fatal in the proportion of 1 in 3 of the deaths under 10 years, and that not for one or two years merely, but for a long period.

The great saving of human life is rendered apparent from the third period embraced in the table. Up to the very moment of small-pox inoculation being superseded by cow-pox the mortality is immense, and the instant the latter is employed, the mortality becomes comparatively trifling.

From 1812 to the publication of the Mortality Bill for 1835, there was no statement made of the number of deaths which annually took place from small-pox. From the increased rate of mortality of late years, and the period of life at which the augmented mortality has taken place, I have for a long time expressed the opinion that small-pox has

been prevailing to a greater extent than has been generally supposed. This must remain a matter of conjecture for the period prior to 1835, unless some person, possessing the persevering industry of Dr. Watt, will attempt the task of completing his tables from 1812 to 1835.

The following Table gives the deaths from small-pox, according to the Mortality Bills for the five years from 1835 to 1839, but it does not include the whole of them, as the causes of death were not ascertained in many instances; and at the Tollcross burying-ground, in which the interments in 1835 and 1836 amounted to 645, the diseases have not been recorded.

Table of the Deaths from Small-pox, 1835 to 1839.

Years.	AGES.								Total.
	Under 1 Year.	1-2	2-5	5-10	10-20	20-30	30-40	Above 40	
1835	204	154	75	17	14	8	1	..	473
1836	202	174	144	23	6	24	2	2	577
1837	93	116	94	24	10	11	4	..	352
1838	111	99	119	28	11	14	4	2	388
1839	137	98	113	19	15	17	5	2	406
Total	747	641	545	111	56	74	16	6	2,196

The annual average number of deaths under 10 years of age, for ten years prior to 1812, from small-pox, was 101, while, during the last five years, they have amounted to 2,196, being at the rate of 439 per annum.

Table shewing the Number of Patients with Small-pox annually admitted into the Glasgow Royal Infirmary, from 1795 to 1839.

Years.	No.	Years.	No.	Years.	No.	Years.	No.	Years.	No.	Years.	No.
1795	4	1803	..	1811	..	1819	7	1826	1	1833	14
1796	2	1804	1	1812	4	1820	..	1827	25	1834	62
1797	4	1805	3	1813	2	1821	33	1828	4	1835	72
1798	9	1806	1	1814	2	1822	5	1829	1	1836	110
1799	..	1807	5	1815	4	1823	46	1830	10	1837	*
1800	1	1808	..	1816	14	1824	37	1831	12	1838	35
1801	1	1809	10	1817	7	1825	3	1832	3	1839	59
1802	..	1810	2	1818	11						
	21		22		44		131		56		352

This table shews a progressive increase in the number of patients with small-pox admitted into the infirmary for some years past, and also how small a proportion of the adult population was admitted during the years in which, as appears from the first table, small-pox was annually carrying off hundreds under 10 years of age.

Of the 110 patients treated in the Infirmary in 1836, 95 came under my charge; and the next table gives the sex, nation, and district of each patient, with the proportion vaccinated, and the number of deaths. The patients, with three exceptions, were adults.

* The number of patients with small-pox was not stated in the Infirmary Report for 1837, but would probably be from 50 to 60.

	Highlanders.	Lowlanders.	Irish.	Total.
Males	34	11	4	49
Females	36	10	0	46
Total	70	21	4	95
Males Vaccinated . . . . .	..	..	..	32
Females ,,	17	6	0	23
Males Unvaccinated . . . . .	..	..	..	17
Females ,,	19	4	0	23
Males Dead	9	3	1	13
Females ,,	10	3	0	13

The first remarkable feature in the above table is, that out of 95 patients affected with small-pox, there were only four natives of Ireland. The second is, that of 91 natives of Scotland, 70 are Highlanders, and 21 natives of the Lowlands. A very large proportion of the Highlanders were from the remote islands, and all of them, without a single exception, had recently arrived in Glasgow. 55 of the patients had apparently been vaccinated, and 40 never had this operation performed. Nearly one-half of the Highlanders had marks on their arms, but these were not in general the result of what I would consider perfect vaccination. No death occurred in any individual who presented the appearance of having been properly vaccinated. The Irishman who died was a vagrant, who had not been vaccinated, and who was exposed to the contagion of small-pox in a lodging-house at Finnieston. The occurrence of so many as 95 cases of small-pox would at first sight induce a belief that the efficacy of vaccination is not so great as was anticipated by Dr. Jenner. Further investigation, however, alters this view of the subject; for if any additional argument in favour of vaccination were wanting, it is amply supplied by the above table. The natives of Ireland furnish, as has been already shewn, 27 per cent. of the admissions to the Fever Hospital; while of 95 individuals with small-pox, 4 only were Irish. There must exist some cause for this immunity from small-pox in the Irish; and it is to be found in the general practice of vaccination among the lower classes, by the surgeons of the county, and other dispensaries of Ireland. To the neglect of vaccination, and to the practice of it with impure lymph, deteriorated perhaps in the transmission, must be ascribed the prevalence of small-pox among the Highlanders.

Having proved, from the records of the Infirmary and the Mortality Bills of the city, that small-pox is decidedly increasing, and that its mortality has been alarmingly great for the last five years at least, and most probably for a longer period, it becomes a subject of inquiry, to what cause is the increased frequency and mortality of small-pox to be ascribed? I have no hesitation in affirming, that it is owing to the neglect of vaccination, and not to the occurrence of small-pox after vaccination.

From the early period of life at which the deaths from small-pox took place, as seen in the table in the preceding page, by which it appears that of 2,196 deaths 1,933 were under five years of age, I am warranted in the inference that vaccination had never been performed; and from the small number of deaths after the age of ten, I consider it as demonstrated, that death from small-pox after vaccination is very rare; for it

must be kept in view that the majority of the patients above 10, who died from small-pox in 1836, were inmates of the hospital, none of whom had been vaccinated.

The increasing prevalence of small-pox should attract the attention of the public. It is a disease which has caused a mortality during the last few years inferior only to that of typhus and measles, and it is one which could be eradicated, under proper management, at a trifling expense, less indeed than the sum paid from the poor's rate for the coffins of its victims. The rate of mortality from small-pox is assumed upon good authority to be 1 in 5 of those attacked.

2. Scarlet Fever.

Table of the Deaths from Scarlet Fever, with the Ages, from 1835 to 1839.

Years	Under 1 Year.	1-2	2-5	5-10	10-20	20-30	30-40	40-50	50 and upwards.	Total.
1835	27	50	89	73	23	7	2	2	..	273
1836	34	57	136	86	25	9	5	1	2	355
1837	4	9	34	22	5	3	1	..	1	79
1838	3	15	42	17	7	1	1	1	..	87
1839	29	45	104	74	10	..	..	..	..	262
Total	97	176	405	272	70	20	9	4	3	1,056

The mortality from scarlet fever is liable to very great variations in different epidemics, depending on the virulence of the epidemic, the season of the year, and the worldly condition of the family in which it makes its attacks. Among the better classes in Glasgow, it is by no means a very fatal disease, except in particular families, where, from peculiar circumstances of constitution, it occasionally carries off more than one member of a family, and hence arises an exaggerated notion of its fatality.

I agree with Dr. Southwood Smith in considering the rate of 1 in 11 of those attacked as very high; and, in forming an estimate of the numbers attacked, from the number of deaths, I am inclined to assume the rate of mortality for the five years as 1 in 12. This would give the number attacked during the last five years as 12,672, which I am convinced is rather under, than above, the exact truth.

3. Measles.

Table of the Deaths from Measles, with the Ages, from 1835 to 1839.

Years.	Under 1	1-2	2-5	5-10	10-20	20-30	30-40	40-50	Total.
1835	116	141	121	34	10	4	..	..	426
1836	86	209	183	38	1	1	..	..	518
1837	77	133	122	16	2	1	..	..	350
1838	76	124	161	39	3	1	1	..	405
1839	165	259	276	73	7	2	..	1	783
Total.	520	866	863	200	23	9	1	1	2,482

Measles among the classes in easy circumstances is by no means a fatal disease, and, like scarlet fever and other epidemics, confines its ravages to the children of the poor. When the universality of the disease is taken into account, I am inclined to believe that the mortality from it is rated much too high at 1 in 12 of those attacked.

The deaths are as before stated; and it is open to every medical practitioner to draw from the data which they afford those conclusions which he may feel warranted by his own experience.

VIII.

Deaths from all these Diseases, and estimated Number attacked during the last Five Years.—From the tables which have been presented of fever, scarlet fever, measles, and small-pox, all of which are diseases propagated by contagion, and all of which, during the last five years, have been epidemic in Glasgow, the following Table has been constructed; which exhibits at one view the mortality from each disease, the number of victims under and above five years of age, and the probable number who have been affected with these diseases.

DISEASES.	Deaths.			Estimated Number attacked.		
	Under 10 Years.	Above 10 Years.	Total.	Under 10 Years.	Above 10 Years.	Total.
Fever. . .	752	4,036	4,788	..	..	55,949
Scarlet Fever	1,020	36	1,056	12,240	432	12,672
Small Pox .	2,044	152	2,196	10,220	760	10,980
Measles . .	2,448	34	2,482	29,376	408	29,784
Total . .	6,264	4,258	10,522	..	..	109,385

The deaths from these four contagious and eruptive diseases (for I feel inclined to class the present epidemic fever as an eruptive disease, since 74 per cent. of those treated in hospital exhibit an exanthematous eruption) amounted, during five years, to 10,522, being 26·06 per cent. of the whole number of deaths. Three of them have pressed heavily upon the young, while fever, as usual, has selected its victims from the productive portion of the community.

Of the number of deaths there can be no doubt. Of the number affected, as estimated from the deaths, there may be a difference of opinion. If the numbers are thought too high, the increased rate of mortality from eruptive fevers, including typhus, which such an opinion implies, only points out the greater malignity of these diseases in Glasgow, compared with the general average of other places; and in this way illustrates the state of the population.

IX.

General Remarks.—The prevalence of epidemic diseases depends upon various causes; but it is demonstrable that their rapid and general diffusion must be aided by many concurrent circumstances, among which certain states of the atmosphere and contagion must be ranked; but the most influential of all is poverty and destitution. In every one of the

epidemic fevers which have ravaged Glasgow, its progress has been slow, unless extreme destitution has existed; and it is only when contagious fever, that unerring index of destitution, has prevailed, and influenced the selfish fears as well as the benevolent sympathies of the inhabitants, that any active, although temporary, measures have been taken to alleviate the existing distress. The fever abates from want of *materiel*, and the wants of the poor remain unnoticed till its next recurrence. All the means employed at a vast expense are merely temporary; and are discontinued as soon as there is a cessation of the disease. In 1817 to 1819, when fever first prevailed to an alarming extent, its ravages were preceded by two bad harvests and want of employment for the labouring poor, and to prove the extent of the distress, not among the pauper class but among the industrious poor, it appeared in 1820 that 2,043 heads of families pawned 7,380 articles, on which they raised 740*l*. Of these heads of families 1,946 were Scotch, and 97 English or Irish. But the fact most deserving attention is, that 1,375 had never applied for, or received, charity, of any description, though they knew that funds had been voluntarily raised to a large amount; 474 received aid from the relief committee, and 194 were paupers. The individuals amounted to fully 8,000; and what were the articles pawned? blankets, sheets, and clothing of every description,—all the little articles of household furniture having been previously sold without the hope of ever being able to redeem them.*

In 1826 to 1828, 1831-32, 1837-38, when large sums were voluntarily raised, and in 1832, under the cholera assessment acts for the relief of the unemployed and sick poor, it was the previous existence of fever and the dread of cholera that instigated the benevolent deed. For the victims of the epidemic diseases of children no provision is ever made, though the coming pestilence of the adult population is clearly pointed out by the previous mortality of the young. Upon all the above occasions the funds liberally raised were judiciously expended; and the community owe a debt of gratitude to many for the time and labour bestowed by them as members of the Relief Committee. The funds have been expended in procuring employment, in feeding the poor at soup kitchens, in the purchase of fuel, in redeeming articles of clothing from pawn, and facilitating the admission of fever patients into hospitals. The Tables given of the number of fever patients in each year will prove that the years in which they are most numerous are those in which destitution most prevailed; and thus demonstrate that destitution and fever are inseparably linked together. The proceedings of the various Fever and Relief Committees in feeding the poor prove that in their estimation food, fuel, and clothing are the best preventives of fever. While it is granted that destitution is the cause and effect of the prevalence of fever, few are aware of the extent of the destitution. In May, June, and July, 1837, employment was procured for 3,072 males; 18,500 individuals were supplied with food daily from the soup kitchens, and, in the winter of 1837-38, 2,570 carts of coals (each weighing 12 cwts.) were distributed among 9,000 families, and clothing to a great extent redeemed from pawn. In short, if those who officially come into contact with the mass of crime and disease in our police courts and hospitals,

* Cleland, p. 139.—*Folio*, 1831.

be asked to what it is mainly to be ascribed? the uniform answer will be, "to destitution." That this opinion is founded upon truth will appear evident from the fact, that during the current year (as at former periods) the patients sent into hospital, not merely for fever but for other diseases, by magistrates, elders, and kirk-sessions, beyond their right of recommending, will amount to fully 2,000 per annum.

The next cause of the diffusion of epidemic diseases is the state of the districts which the poor inhabit. But they have no choice of a locality; their state of destitution ties them firmly to one, and the increasing amount of destitution is annually adding to the density of the population in the already most densely peopled districts. A reference to the map illustrates this point. In all the districts of the burgh, and in the suburbs, there is a want of sewerage and drainage, and the deficiency is in the ratio of the necessity for it. The streets, or rather lanes and alleys, in which the poor live, are filthy beyond measure; excrementitious matter and filth of every description is allowed to lay upon the lanes, or, if collected, it remains accumulating for months, until the landlord, whose property it is, is pleased to remove it. The houses are ruinous, ill constructed, and to an incredible extent destitute of furniture. In many there is not an article of bedding, and the body clothes of the inmates are of the most revolting description. In fact, in Glasgow, there are hundreds who never enjoy the luxury of the meanest kind of a bed, and who, if they attempted to put off their clothes, would find it difficult to resume them. The lodging-houses are the media through which the newly arrived immigrants find their way to the Fever Hospital; and it is remarkable how many of the inmates of that hospital coming from lodging-houses have not been six months in the city. Other causes connected with destitution might be enumerated, but this would here be unnecessary.

For years I have pointed out the effects of the indiscriminate admission of pauper patients into the Infirmary, in relieving the poor's-rates of the expense of their treatment, and laying it upon the voluntary contributors to the Infirmary, and also in rendering unavoidable the expenditure of those large sums of legacies, the interest of which only, it is presumed, was intended to be annually expended, while the capital was to remain untouched. Matters have now reached to such a point, that the managers of the Infirmary have notified that, after the 1st October next, the doors of the Infirmary must be closed to all but those who present a recommendation from some qualified subscriber.* This will bring the matter to an issue, and it is to be hoped that the guardians of the poor's-rates will see the necessity of providing sufficient accommodation for all such as may be likely to require admission into hospital in the next epidemic, and that they will bear in mind, that the population has increased 70,000 since the Fever Hospital was erected, and likewise that the hospital has been already found too small for the demands upon it. If any arguments but those of common humanity were wanting to induce the inhabitants of this city to pay more attention to the condition of the poor,

* A temporary arrangement has since been made with the managers of the Infirmary, by the magistrates, and by the heritors of the Barony parish, according to which fever patients recommended by them are to be paid for out of the poor's-rates, at the rate of 15s. each.

both when in health and in disease, they might be drawn from the great pecuniary expenditure which has been incurred for the treatment of fever patients, but hitherto with only temporary advantage.

The treatment of fever patients in hospital during the last twenty-three years, including the expense of erections, has cost the community 59,547*l.*, or 2,589*l.* per annum; the prevalence of cholera, and the co-existing destitution in 1832, cost nearly 18,000*l.*; and during 1837, 8,000*l.* were expended either upon the victims of fever, or upon those who, but for the timely aid, would certainly have been added to the number.

The following Table, for the precise accuracy of which however I cannot vouch, shews very nearly the amount raised by voluntary contribution during the last twenty-five years, and expended both in relieving the industrious poor, and in the treatment of fever or cholera patients, exclusive of the sums annually expended for the treatment of other diseases in hospitals:—

YEARS.	Sums Raised.	Sums Expended.	REMARKS.
1816-17	<i>£.</i> large	<i>£.</i> 9,653	Among 23,130 persons.
1818	6,626	..	} Large distributions of clothing, coals, and meal.
1820	..	..
1826	..	9,000	} Expended in 8 months in procuring work.
1829	..	2,950	
1832	18,000*	18,000†	{ Partly (3,531 <i>l.</i>) in feeding the population, (355 <i>l.</i>) clothing, (870 <i>l.</i>) washing, &c.; (654 <i>l.</i>) coffins, &c.
1837	5,000	8,000	
			Food, fuel, and redeeming clothes from pawn.
Total .	..	47,603	
1817 to 1840	..	59,547	Expended by Infirmary on fever patients.

Upon inspecting the map of the city and suburbs, the coloured portions of which represent the burgh, a stranger will be struck with the small proportion in extent which the city bears to the suburbs. His astonishment will be increased when he is told, that over the city and suburbs there are four independent magistracies and boards of police, four assessments for the poor's-rates, and four modes of administering the poor's funds, equally independent of one another. That the amount levied in the city, in 1839, amounted to 11,790*l.*; in the Barony, about 5,500*l.*; in Gorbals, 800*l.*; and in Govan, 1,900*l.*, part only of which is expended in the town portion of the parish. It is quite obvious that the niggardly administration of the poor's funds in any of the districts, will force the paupers into others where the allowance is more liberal, and this is one cause of the increasing density of the city population.

To remedy the evil one municipal government, one police board, one mode of assessment, and one uniform mode of distributing the poor's

* About 10,000*l.* voluntary; the balance consisted of cholera assessments.

† Not all expended in 1832, but the balance, amounting to £1,854, lent to Infirmary and spent.

funds, are imperiously demanded to check crime and diminish disease and pauperism. Centralization would increase the efficiency of all the above boards.

But besides the criminal police of the district, a sanatory police is also requisite, and for this purpose much more extensive powers should be vested in the police than they at present possess. Power should be given to remove filth of every description daily. Lodging-houses should be under their surveillance, and proper conveniences constructed of durable materials, and under the charge of the police, should be erected in the localities occupied by the working classes—the charge of the sewerage and drainage should belong to this department, and legislative powers be obtained to open streets through the dense unventilated districts of the town.

To improve the condition of the industrious working classes, and to prevent their amalgamation with the class below them, the law of arrestment of wages should be instantly repealed. The half-pay of the officer of the army and navy, the pensions of their widows, and the annuities to widows on the funds of the Church of Scotland, of the advocates, writers to the signet, and of the faculty of physicians and surgeons, are declared alimentary and non-arrestable; and yet the daily wages of the operative are weekly arrested in the hands of his employer. The harassing vexation, and the almost incredible amount of expense, attendant upon the legal proceedings—the loss of valuable time, and, frequently, of situation, debase the workman, and often drive him to intemperance and destitution. The arrestment of workmen's wages is an evil of the deepest magnitude; for years I have watched its operation on the state of the working classes, and know not a greater boon that could be conferred upon them than the repeal of the law, and an enactment declaring wages alimentary.

The poor-law of Scotland ought instantly to be revised. Without referring to the rural districts, it is quite obvious that in our towns some change must be made. True economy and self-interest demand it; the increasing destitution pointed out by the increasing mortality shews the necessity for it, and the practical precepts of Christianity urgently enjoin it. The provision for the destitute must include the healthy as well as the sick; the system must be in continual operation; disease must be prevented, not treated.

The children of the poor should be, like their parents, under the charge of the district surgeons. Vaccination should be performed on every infant. Fever patients should be speedily removed to hospital, and not left at home for eight or ten days diffusing contagion. Relief must be extended after recovery until work is found, and one uniform system of co-operation be established among the guardians of the poor's funds, the managers of our hospitals, lunatic asylums, houses of refuge, and other charitable establishments.